

## PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

To:

HAW, Yong Noke

8th Fl. Songchon Bldg., 642-15, Yeoksam-dong, kangnam-ku  
Seoul 135-080 Republic of Korea

PCT

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing

(day/month/year) 09 MAY 2006 (09.05.2006)

Applicant's or agent's file reference

05FLWR022

FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/KR2005/002585

International filing date (day/month/year)

09 AUGUST 2005 (09.08.2005)

Priority date (day/month/year)

International Patent Classification (IPC) or both national classification and IPC

C10M 111/00(2006.01);

Applicant

LG ELECTRONICS, INC. et al

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

## 2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/KR



Korean Intellectual Property Office  
920 Dunsan-dong, Seo-gu, Daejeon  
302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Date of completion of this opinion

09 MAY 2006 (09.05.2006)

Authorized officer

KIM, Kyong Min

Telephone No. 82-42-481-8301



**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/KR2005/002585

**Box No. I Basis of this opinion**

1. With regard to the **language**, this opinion has been established on the basis of:

- ☒ the international application in the language in which it was filed
- ☐ a translation of the international application into \_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

- ☐ a sequence listing
- ☐ table(s) related to the sequence listing

b. format of material

- ☐ on paper
- ☐ in electronic form

c. time of filing/furnishing

- ☐ contained in the international application as filed.
- ☐ filed together with the international application in electronic form.
- ☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

**WRITTEN OPINION OF THE  
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**Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Claims	None	YES
	Claims	1-6	NO
Inventive step (IS)	Claims	None	YES
	Claims	1-6	NO
Industrial applicability (IA)	Claims	1-6	YES
	Claims	None	NO

**2. Citations and explanations :**

**1. Reference is made to the following documents:**

- D1) KR2003-0077095 A
- D2) JP3161789 B2
- D3) US5292444 A
- D4) WO2004/039483 A
- D5) US5269955 A

**2. Novelty**

The subject matter of claims 1-6 of the present invention relates to a refrigerating machine oil for a compressor comprising: a lubricating oil applied on frictional surfaces to reduce friction thereon; and less than 1.0 wt% of carbon nano particulate like a fullerene and a graphite.

Document D1 cited in the International Search Report relates to the lubricant composition comprising a base oil selected from a group of mineral oil, animal and plant oil and synthetic oil and 0.1-5 wt.% of fullerene soot powder which contains 3-45wt.% of pure fullerene.

Document D2 relates to a hydrogenated fullerene useful for a lubricating material such as solid lubricant, having a carbon skeleton composed of fullerene-like closed shell structure.

Document D3 relates to novel compositions of matter that are lube oils comprising an oil/hydrocarbon soluble fullerene grafted amine-containing polymers and a suitable base oil and, optionally other suitable additives for use as a lubrication oil.

Document D4 relates to a dispersant or a solubilizer containing a particular calixarene compound that can better disperse or solubilizer carbon-based materials such as fullerene and carbon nano tube in organic matrices such as lubricating oil, and to a lubricant containing these dispersants or solubilizers.

Document D5 relates to the lubricating oil for compression-type refrigerators that anti-load additive such as fluorinated graphite is added.

(Continued on Supplemental Sheet)

**WRITTEN OPINION OF THE  
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**Supplemental Box**

In case the space in any of the preceding boxes is not sufficient.  
Continuation of:

Claim 1-4, 6 of the present invention are similar to the lubricant composition or the lubricant containing a fullerene of Document D1 -D4. Claim 5 of the present invention is similar to the lubricating oil that anti-load additive such as fluorinated graphite is added.

Accordingly, the subject matter of claim 1-6 does not seem to be novel.(PCT Article 33(2)).

**3. Inventive Step**

Claim 1-4, 6 of the present invention and Documents D1-D4 cited in the International Search Report are similar regarding the lubricant containing a fullerene. Claim 5 of the present invention and Documents D5 are similar regarding the lubricating oil containing fluorinated graphite. Although an ultrasonic dispersion of claim 6 is not described in citation document D1-D4, this is only the technology which is generally known or used customarily.

Thus, Claim 1-6 of the present invention is very easily modified from the Document D1- D5 by the skilled person in the art.

Therefore, claims 1-6 does not meet the criteria set out in PCT Article 33(3).

**4. Industrial Application**

The subject matter of claims 1-6 is considered to be industrially applicable under PCT Article 33(4).

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C10M 111/00(2006.01)i

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